

Challenges to Dairy Biogas Production in California

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California Dairy Industry

- Massive economic engine
- \$5.2 billion in farmgate receipts
- \$47.4 billion in economic activity
- Responsible for ~ 455,000 jobs
- 1.7 million milk cows
 - Consume feed including food processing byproducts
 - Produce organic residuals

Must haves

- Political leadership
- Capital
- Markets
- Regulatory flexibility and stability
 - Water quality
 - Air quality
 - Energy regulation
- Commitment

Dairy A example

- Annual electrical cost prior to digester = \$180,000
- Offsets 100% of electrical load
- Exports 25% of generated power to grid
- Flaring two-thirds of biomethane
- Presently using net-metering
- Interconnection and AB 728 & AB 2228

Dairy A example continued...

- Shuts down generator once a month for 2 hours ($12 * 2 = 24$ hours / year) for maintenance
- Shuts down generator once a year for overhaul for 48 hours
- $24 + 48 = 72$ hours/year = 3 days/year down
- 365 days – 3 days = 362 days/year running
- For 362 days, the dairy produces 125% of electrical needs

Dairy A example continued...

- 3 days of electricity demanded from grid
- 2 hours of downtime per month triggers high monthly demand charges
- Before digester \$180,000 annual cost
- After digester:

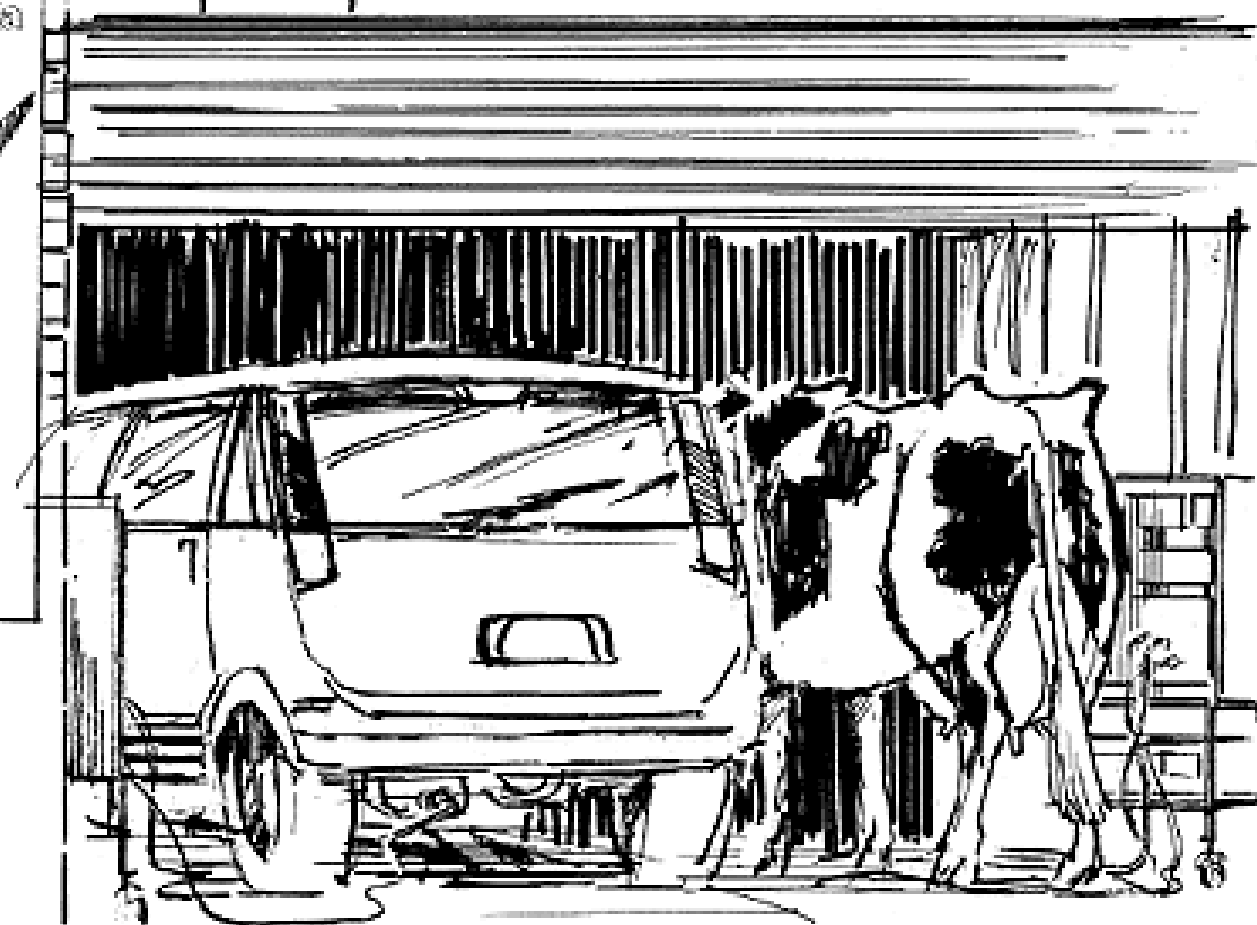
– **\$90,000 annual cost ????**

- Any excess net generation free to the utility
- Flared biomethane unused...

State of California
LICENSED

SMOG
CHECK

INSPECTION &
REPAIR STATION



REXBASIN THE CACAMUNITO BEE

Challenges

- Increasing human population
- Increasing cow population
- Increasing conflict in the rural/urban interface
- Static or dwindling natural resources in the face of increased competition
- Increasing regulatory burden on people and farms
- Too little capital
 - Few or nonexistent CA funds to enhance scenario
 - Dwindling federal resources in the face of massive deficits
- Unmarketable mandates

Meadowbrook Dairy

- San Bernardino County
- Plug Flow system
- 160 kW



Blakes Landing Farms



- Covered Lagoon
- Marin County
- 75 kW



Castelanelli Dairy

- Covered Lagoon
- San Joaquin County
- 160 kW

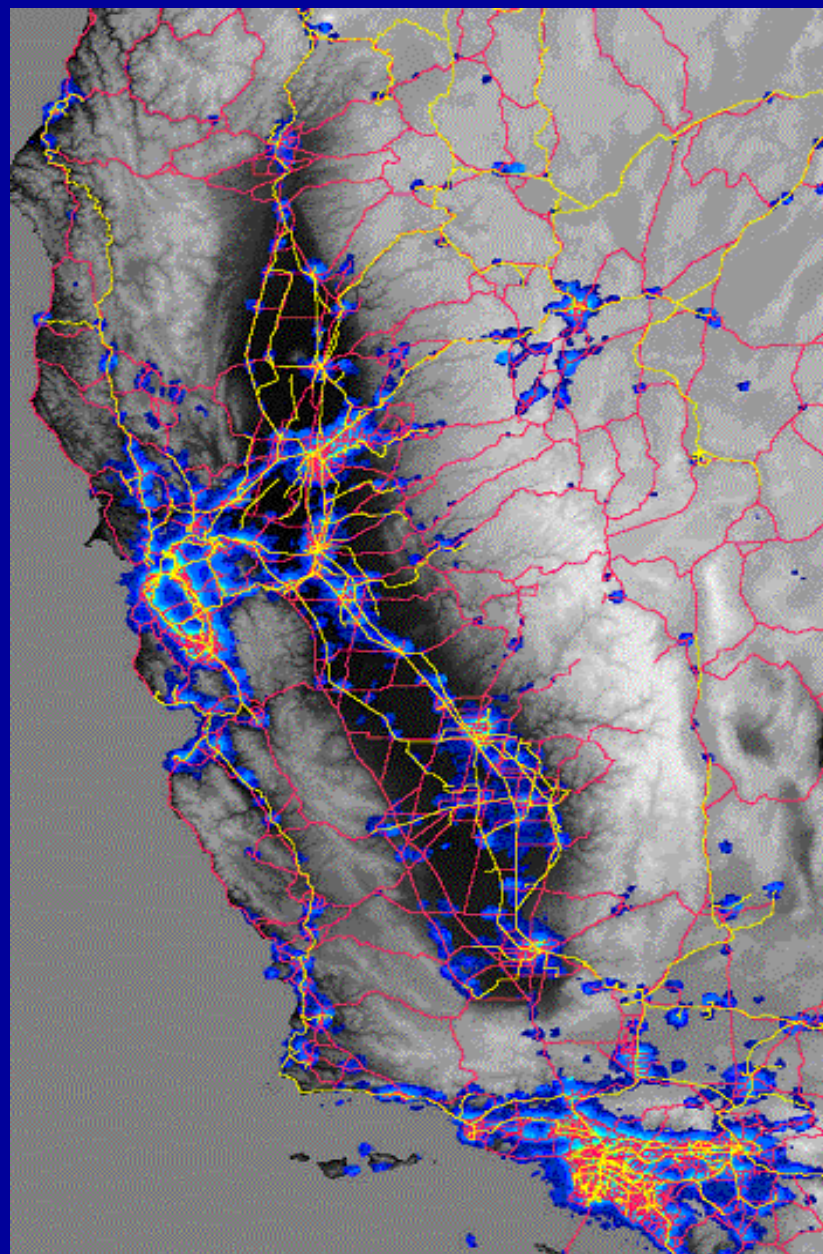


Hilarides Dairy



- Covered Lagoon
- Tulare County
- 500 kW



















Opportunity

- Need for support to develop biomethane resources (ethanol)
- Need for portfolio
 - Electricity
 - Pipeline quality
 - Vehicle fuel
- Co-digestion?

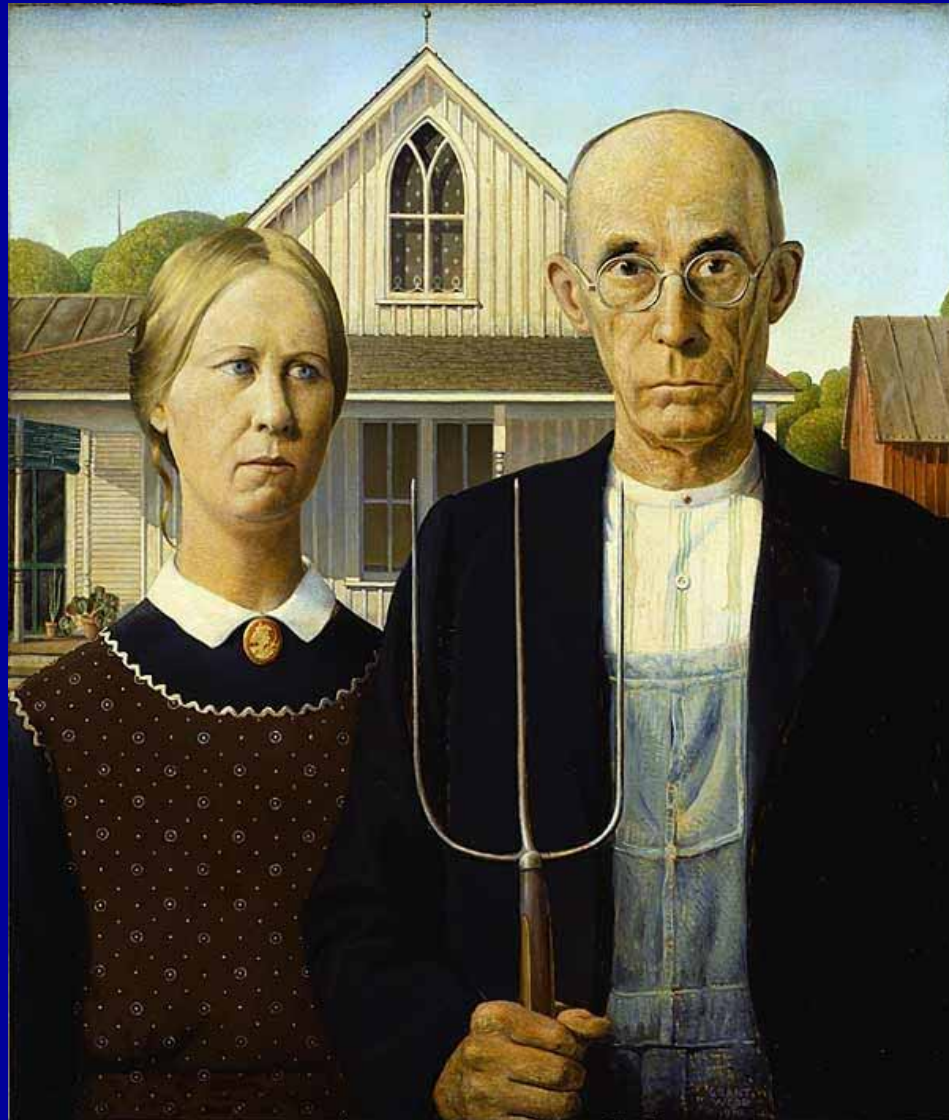


Must haves

- Political leadership
- Capital (CDFA decision, Farm and Energy Bills)
- Markets
- Regulatory flexibility and stability
 - Water quality
 - Air quality
 - Energy regulation
- Commitment







Thank you

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